SUPERMICRON PIPING

STRUCTURAL MONITORING FOR UNDERGROUND PIPES

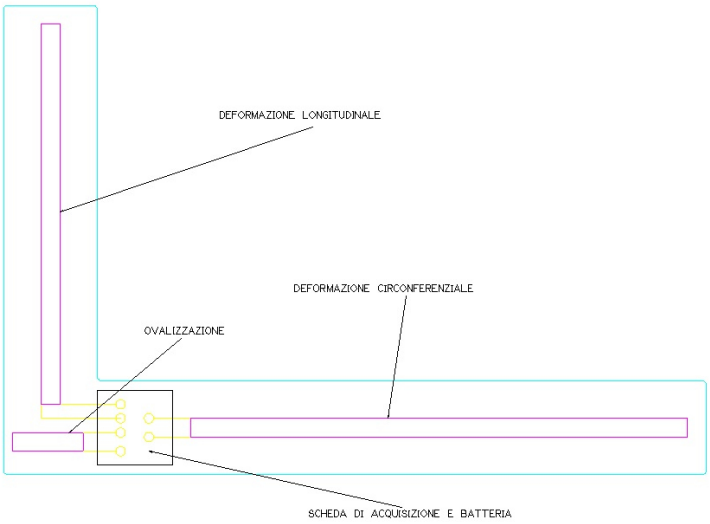
The **SuperMicron** line dedicated to pipeline monitoring consists of two different sensors (**SMWP-1** and **SMWP-2**) that can be used independently or in combination with each other.

SUPERMICRON FOR UNDERGROUND PIPES

A **revolutionary system**, able to monitor **continuously** and with **great precision** the behavior of external or underground pipelines, alerting in real time in case of **deformations** and **anomalous pressure variations** or **angular displacements** and capable of identifying any **leaks** and their **exact location**.

With difference to the **SuperMicron** sensors used on the surface, which communicate directly via radio with the gateway, the data collection can also take place through an antenna cable that runs on the pipeline near the sensors themselves without the need for any wiring, to the advantage of **robustness** and **durability of the system**.

The **power supply** of each sensor is provided by a **lithium thionyl battery** sized to guarantee a duration of more than **30 years** with a sampling frequency every 20 minutes.



The entire system is supplied **turnkey**, including the **sensors**, the **gateways** necessary for data collection and transmission, the visualization platform, the **management software** including alerts and alarms and, on request, the **predictive software** for maintenance and **evaluation of the useful residual life**.of each element of the system.

SYSTEM ADVANTAGES

1 Immediate control over the pipeline **trim** already at the **time of laying**, backfilling and hydraulic testing.

2 Continuous and remote monitoring, capable of intercepting in the bud any movement of the pipeline and of each element with respect to the contiguous ones, due for example to **movements or subsidence of the laying surface**, whatever the triggering cause.

3 Continuous and remote monitoring, capable of **intercepting in the bud and identifying with great precision the presence of leaks and their position**, consequently directing maintenance interventions, reducing costs to a minimum.

4 Continuous monitoring, integrated by the **predictive maintenance software** and the estimate of the residual life of the structure, **ensures the durability of the work in the long term and minimizes maintenance costs over time**.

THE DEDICATED SENSORS

SMWP-1

A three way deformation sensor:

- circumferential deformation
- longitudinal deformation
- apical crushing (ovalization)

CONSTRUCTION MATERIAL: polyester fabric and epoxy resin

DIMENSIONS: (circumferential x longitudinal)
Model A: (for pipes with a diameter from 300 to 700 mm): **400 mm x 400 mm**
Model B: (for pipes with a diameter> 700 mm): **600 mm x 400 mm**

PROTECTION: IP68

STRAIN RESOLUTION: +/- 1 microstrain

COMBINED TRIM SENSOR: (accelerometer, gyroscope, magnetometer) inclination reading on three axes (accuracy of 0.02 °), vibration reading and trigger function for oversampling

CONNECTIVITY: 868 Mhz / 915 Mhz or RS-485

POWER SUPPLY: lithium thionyl battery, 3.6 V

AUTONOMY: >30 years with sampling every 20 minutes, higher on request

COATING: 1 mm vulcanization waterproof and crashproof

INSTALLATION AND ACTIVATION: 5 minutes

SMWP-2

Typically alternated in operation with the SMWP-1 sensor (1 SMWP-1 sensor every 3 SMWP-2 sensors), it provides the precise reading of the ovalization together with a more accurate reading of any angular movements (thanks to the use of a combined sensor of trim) and the phonometric reading for the identification of leaks.

CONSTRUCTION MATERIAL: polyester fabric and epoxy resin

DIMENSIONS: 115 x 100 mm

PROTECTION: IP68

STRAIN RESOLUTION: +/- 1 microstrain

COMBINED TRIM SENSOR: (accelerometer, gyroscope, magnetometer) inclination reading on three axes (accuracy of 0.02 °), vibration reading and trigger function for oversampling

PHONOMETRIC SENSOR FOR LEAK IDENTIFICATION

CONNECTIVITY: 868 Mhz / 915 Mhz or RS-485

POWER SUPPLY: lithium thionyl battery, 3.6 V

AUTONOMY: >30 years with sampling every 20 minutes, higher on request

COATING: 1 mm vulcanization waterproof and crashproof

INSTALLATION AND ACTIVATION: 5 minutes

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